

## CONTENTS

- 1 **Editorial**  
J. F. Knott
- 3 **Materials perspective Superplastic forming: evolution from metallurgical curiosity to major manufacturing tool?**  
R. Grimes
- 11 **Comparison of torsion and compression constitutive analyses for elevated temperature deformation of an Al–Li–Cu–Mn alloy**  
G. Avramovic-Cingara, H. J. McQueen and D. D. Perovic
- 20 **Recrystallisation of supersaturated Al–Mn alloys. Part 1 – Al–1·3 wt-%Mn**  
M. Somerday and F. J. Humphreys
- 30 **Recrystallisation of supersaturated Al–Mn alloys. Part 2 – Al–0·3 wt-%Mn**  
M. Somerday and F. J. Humphreys
- 36 **Correlation between flow strengthening and cavitation in superplastic Al–Cu eutectic alloy**  
B. P. Kashyap
- 43 **Effect of plastic deformation on microstructure and properties of stir cast Al–Pb bearing alloy**  
D. R. Sun, Z. Y. Cao and Y. B. Liu
- 48 **Damping characterisation of aluminium containing interconnected wire reinforcement using a novel frequency domain based method**  
N. Srikanth, V. Ganesh and M. Gupta
- 55 **Determination of constitutive behaviour of as cast AA 5182 for deformations which occur during direct chill casting using the Gleble 1500 machine**  
A. R. Alhassan-Abu and M. A. Wells
- 62 **Investigation of blunting line and evaluation of fracture toughness under mixed mode I/III loading in commercially pure titanium**  
S. V. Kamat and M. Srinivas
- 67 **Effect of cooling rate on structure and mechanical properties of monotectoid zinc–aluminium alloys**  
T. Savaskan, M. S. Turhal and S. Murphy
- 75 **Microstructure and properties of Cu–Ag, Cu–Ag–Cr and Cu–Ag–Cr–RE alloys**  
L. Zhang and L. Meng
- 80 **Study of cast microalloyed steels**  
B. D. Jana, A. K. Chakrabarti and K. K. Ray
- 87 **Magnetic field induced twins in martensite and their effect on subsequent cementite precipitation in Fe–0·32 wt.-%C steels**  
D. R. Ou, H. H. Zhou, G. Y. Tang and J. Zhu
- 91 **Simulations of precipitation in ferritic steels**  
Y. F. Yin and R. G. Faulkner
- 99 **Strain induced precipitation effect on austenite static recrystallisation in microalloyed steels**  
S. F. Medina, A. Quispe and M. Gómez
- 109 **Analysis of mechanical descaling: experimental and modelling approach**  
M. Krzyzanowski, W. Yang, C. M. Sellars and J. H. Beynon
- 117 **Effect of solution temperature on grain growth and mechanical properties of a high strength 18%Ni cobalt free maraging steel**  
Y. He, K. Yang, W. S. Qu, F. Y. Kong and G. Y. Su
- 125 **Galvanisability of silicon free CMnAl TRIP steels**  
J. Maki, J. Mahieu, B. C. De Cooman and S. Claessens
- 132 **Effect of transient liquid phase diffusion bonding on properties of an ODS nickel alloy MA758**  
A. Ekrami, T. I. Khan and H. Malik
- 137 **Reaction products and growth kinetics during diffusion bonding of SiC ceramic to Ni–Cr alloy**  
J. C. Feng, H. J. Liu, M. Naka and J. C. Schuster
- 143 **Materials perspective Creep resistant aluminium alloys and their applications**  
J. S. Robinson, R. L. Cudd and J. T. Evans
- 156 **Alloying of pure magnesium with Mg–33.3 wt-%Zr master alloy**  
Ma Qian, D. Graham, L. Zheng, D. H. StJohn and M. T. Frost
- 163 **In situ monitoring of recrystallisation of rolled copper by non-contact ultrasonics**  
C. B. Scruby, C. E. Bull, R. M. K. Young and F. J. Humphreys
- 173 **Modelling microstructural evolution during annealing of an inhomogeneously deformed material**  
M. Rettenmayr and X. Song
- 178 **Influence of alloying elements on hot corrosion of superalloys and coatings: necessity of smart coatings for gas turbine engines**  
I. Gurrappa
- 184 **Influence of P on hot ductility of high C, Al and Nb containing steels**  
B. Mintz, A. Cowley, C. Talian, D. N. Crowther and R. Abushosha
- 189 **Mechanical behaviour of 316L stainless steel under warm working conditions**  
E. S. Puchi-Cabrera
- 195 **Relevant aspects of allotriomorphic and idiomorphic ferrite transformation kinetics**  
C. Capdevila, F. G. Caballero and C. García de Andrés
- 202 **A new phenomenological description of constant stress tensile creep deformation**  
F. L. Jones
- 207 **Creep deformation in a modified 9Cr–1Mo steel**  
P. Anderson, T. Bellgardt and F. L. Jones

- 214 Creep deformation in a modified 9Cr-1Mo steel – 0 projection approach to prediction of creep properties**  
N. Eberle and F. L. Jones
- 219 Structure and properties of carbon steel to duplex stainless steel submerged arc welds**  
N. A. McPherson, K. Chi, M. S. Mclean and T. N. Baker
- 227 Characterisation of interface in diffusion bonded Fe<sub>3</sub>Al/Q235 carbon steel dissimilar material**  
Y.-J. Li, H.-Q. Wu, J. Wang and Y.-S. Yin
- 231 Investigation of surface damage during tensile deformation in polypropylene using atomic force microscopy and Raman spectroscopy**  
A. Dasari, R. S. Perkins, S. J. Duncan and R. D. K. Misra
- 239 Micro- and nano-scale deformation processes during scratch damage in high density polyethylene**  
A. Dasari, S. J. Duncan and R. D. K. Misra
- 244 Microstructural aspects of tensile deformation of high density polyethylene**  
A. Dasari, S. J. Duncan and R. D. K. Misra
- 253 Development of high strength magnesium–copper based hybrid composites with enhanced tensile properties**  
S. F. Hassan and M. Gupta
- 260 Plasma sprayed graded titanium–hydroxyapatite coatings**  
Y. P. Lu, R. F. Zhu, S. T. Li, Y. J. Song, M. S. Li and T. Q. Lei
- 264 Short communication New method of producing TiB<sub>2</sub> based composite**  
Y.-B. Li, G.-Z. Ruan and N. Li
- 269 Literature review Thallium based high temperature superconductors for microwave device applications**  
S. C. Speller
- 283 Design of a creep resistant nickel base superalloy for power plant applications.**  
**Part 1 – Mechanical properties modelling**  
F. Tancreti, H. K. D. H. Bhadeshia and D. J. C. MacKay
- 291 Design of a creep resistant nickel base superalloy for power plant applications.**  
**Part 2 – Phase diagram and segregation simulation**  
F. Tancreti and H. K. D. H. Bhadeshia
- 296 Design of a creep resistant nickel base superalloy for power plant applications.**  
**Part 3 – Experimental results**  
F. Tancreti, T. Sourmail, M. A. Yesca, R. W. Evans, C. McAleese, L. Singh, T. Smeeton and H. K. D. H. Bhadeshia
- 303 Effect of sillimanite particle reinforcement on dry sliding wear behaviour of aluminium alloy composite**  
M. Singh, D. P. Mondal, R. Dasgupta, B. K. Prasad, A. K. Jha and A. H. Yegneswaran
- 313 Characterisation of hot isostatically pressed nickel base superalloy Inconel 718**  
G. Appa Rao, K. Satya Prasad, M. Kumar, M. Srinivas and D. S. Sarma
- 322 Electrical resistivity measurements on binary Al–15 wt-%In alloy**  
S. I. Bakhtiyarov, R. A. Overfelt and S. G. Teodorescu
- 327 Microstructural alterations through heat treatment and its influence on wear response of a silicon containing zinc based alloy under different test conditions**  
B. K. Prasad
- 336 Characterisation of residual stress distribution in clinching joints of carbon steel by diffraction methods**  
R. Lin Peng, N. Rode, M. Odén, J. Gibmeier and B. Scholtes
- 343 Electrical resistivity studies in low carbon and HSLA–100 steels**  
A. N. Bhagat, S. Ranganathan and O. N. Mohanty
- 347 Influence of Co, Cu and W on microstructure of 9%Cr steel weld metals**  
R. G. Faulkner, J. A. Williams, E. Gonzalez Sanchez and A. W. Marshall
- 355 Acicular ferrite formation during hot plate rolling for pipeline steels**  
M.-C. Zhao, Y.-Y. Shan, F.-R. Xiao and K. Yang
- 360 Dynamical systems approach to the creep of metals – population dynamics model**  
F. L. Jones
- 365 Creep deformation in modified 9Cr-1Mo steel – dynamical systems approach to prediction of creep properties**  
N. Eberle and F. L. Jones
- 372 Effect of shot peening on fatigue property of 0Cr13Ni8Mo2Al steel**  
Y.-K. Gao, F. Lu, Y.-F. Yin and M. Yao
- 375 Stress corrosion cracking of maraging steel weldments**  
K. Y. Sastry, R. Narayanan, C. R. Shamaantha, S. Sundaresan, S. K. Seshadri, V. M. Radhakrishnan, K. J. L. Iyer and S. Sundararajan
- 382 Laser polishing of silica slotted rods**  
H.-Y. Wang, D. L. Bourrell and J. J. Beaman, Jr
- 388 Kinetics equations of non-equilibrium grain boundary segregation induced by applied tensile stress**  
T.-D. Xu
- 393 Reverse transformation mechanism of martensite to austenite and amount of retained austenite after reverse transformation in Fe–13Cr–7Ni–3Si (wt-%) martensitic stainless steel**  
Y.-K. Lee, H.-C. Shin, D.-S. Leem, J.-Y. Choi, W. Jin and C.-S. Choi
- 399 Tensile creep behaviour of NiAl–Cr(Zr) multiphase intermetallic alloy**  
Y. H. Qi, J. T. Guo and C. Y. Cui
- 403 Short communication Grain refinement of commercial purity zirconium by equal channel angular pressing**  
H.-S. Kim, D.-H. Joo, M.-H. Kim, S.-K. Hwang, S.-I. Kwun and S.-W. Chae
- 406 Technical note Recovery for SiC<sub>x</sub>/6061 aluminium alloy composite chips by hot compression**  
C. H. Jiang, D. Z. Wang and J. S. Wu
- 411 Literature review Composition of self-assembled quantum dots**  
C. Lang

- 422 Effect of dynamic strain aging on mechanical properties of vanadium microalloyed steel**  
S. Gündüz and R. C. Cochrane
- 429 Statistical thermodynamic approach to austenitic  $Fe_{1-x}Nb_xN_x$  System**  
N. Shohoji and M. C. Monteiro Diaz
- 435 Investigation into deoxidation during vacuum induction melting nickel base superalloy by using CaO crucible**  
J. P. Niu, X. F. Sun, T. Jin, K. N. Yang, H. R. Guan and Z. Q. Hu
- 440 Recrystallisation of single crystal superalloy CMSX-4**  
D. C. Cox, B. Roebuck, C. M. F. Rae and R. C. Reed
- 447 Microporosity reduction in the modified RR2072 single crystal superalloys**  
Q. Z. Chen and D. M. Knowles
- 456 Creep rupture and fatigue properties of transient liquid phase bonded joints of Ni base single crystal superalloy**  
D.-U. Kim and K. Nishimoto
- 461 Microstructure development and superplasticity in Inconel 718 sheet**  
Y. Huang and P. L. Blackwell
- 467 Mathematical model of deformation and microstructural evolution during hot rolling of aluminium alloy 5083**  
M. A. Wells, D. M. Maijer, S. Jupp, G. Lockhart and M. R. van der Winden
- 477 Effect of roll pass schedule on through thickness texture development in Al-Mn alloy**  
R. L. Higginson, C. Pinna, J. H. Beynon and B. P. Wynne
- 483 Grain refinement and superplastic behavior of a modified 6061 aluminum alloy**  
R. Kaibyshev, F. Musin, D. Gromov, T. G. Nieh and D. R. Lesuer
- 491 Thermal expansion coefficient and wear performance of aluminium/SiC composites with bimodal particle distributions**  
J. M. Molina, R. Arpón, R. A. Saravanan, C. García-Cordovilla, E. Louis and J. Narciso
- 497 Effect of casting techniques on tensile properties of cast aluminium alloy (Al-Si-Mg) and TiB<sub>2</sub> containing metal matrix composite**  
R. Taghiabadi, M. Mahmoudi, M. Emamy Ghomy and J. Campbell
- 503 Finite element modelling analysis of aluminium alloy 2017 thermal/fluid multiple fields during single roll stirring process**  
R.-G. Guan, J.-L. Wen and X.-H. Liu
- 507 Barrelling of aluminium solid cylinders during cold upset forging with constraint at one end**  
S. Malayappan and R. Narayanasamy
- 512 Residual stress development in high strength aluminium alloys using standard and retrogression thermal treatments**  
J. S. Robinson and D. A. Tanner
- 519 Microstructure of Cu/AISI 304L electron beam welded alloy**  
S. Tosto, F. Nenci, J. Hu, G. Corniani and F. Pierdominici
- 523 Hot deformation behaviour of Cu-1.5Ti (wt%) alloy**  
S. Nagarjuna and A. Dutta
- 528 Phase characterisation and kinetic behaviour of diffusion soldered Cu/In/Cu interconnections**  
S. Sommadossi, W. Gust and E. J. Mittemeijer
- 535 Effect of nickel aluminides on tribological behaviour of Zn-Al alloy**  
P. Choudhury and S. Das
- 539 Study of scanning thermoprobe studies on polycrystalline Bi<sub>2</sub>Te<sub>3</sub> based alloys**  
V. K. Gandotra, M. V. G. Padmavati, A. Singh and A. G. Vedeshwar
- 544 Compressive creep behavior of Yb<sub>2</sub>Si<sub>2</sub>O<sub>7</sub>-N<sub>2</sub>-containing silicon nitride ceramic between 1400 and 1500 °C**  
S. Guo, N. Hirosaki, T. Nishimura, Y. Yamamoto and M. Mitomo
- 553 Nanocrystalline diamond films for nanotechnology applications**  
I. S. Forbes, J. R. Rabreau, J. I. B. Wilson and P. John
- 557 Relativity of medium range order in molten Cu-Sn alloys and phase diagram**  
X.-Y. Xue, X.-F. Bian, H.-X. Geng, M.-H. Sun and X.-B. Qin
- 561 Thermomechanical response of 50.7 at.-%Ni-Ti alloy in the pseudoelastic regime**  
A. G. Prince, G. L. Quarini, J. E. Morgan and J. Finlay
- 567 Precipitation kinetics of the  $\gamma'$  phase in nickel base superalloy SC16: an *in situ* neutron diffraction study**  
G. Bruno and H. C. Pinto
- 573 Morphological development of solidification structures under forced fluid flow: experimental observation**  
A. Das and Z. Fan
- 581 Analysis of effect of alloying elements on martensite start temperature of steels**  
C. Capdevila, F. G. Caballero and C. Garcia de Andrés
- 587 Influence of initial microstructure on microstructural stability of 20% cold worked Ti modified austenitic stainless steel**  
M. Vasudevan
- 595 Effect of microalloying additions on steel plate to pipe property variations during UOE linepipe processing**  
J. P. Ormandy, M. Strangwood and C. L. Davis
- 602 J integral and COD fracture criteria in 40CrNiMo steel under mixed mode I+II loading**  
J.-B. Sha, J. Sun and Z. J. Deng
- 613 Optimised running system design for bottom filled aluminium alloy 2199 investment castings**  
M. Cox, R. A. Harding and J. Campbell
- 626 Multiple heat isothermal stress rupture correlations for type 316L(N) stainless steel and their use**  
**Part 1 – Development of reference correlations**  
G. Sasikala, S. K. Ray, S. L. Mannan and P. Rodriguez
- 632 Multiple heat isothermal stress rupture correlations for type 316L(N) stainless steel and their use**  
**Part 2 – Application for nuclear type 316L(N) stainless steel base metal and its weld metal**  
G. Sasikala, S. K. Ray, S. L. Mannan and P. Rodriguez
- 637 Characterisation of long term aging behaviour of 9Cr-1Mo ferritic steel using ultrasonic velocity**  
Anish Kumar, B. K. Choudhary, T. Jayakumar, K. Bhanu Sankara Rao and Baldev Raj

- 642 Investigation of caustic stress corrosion cracking of a carbon steel by slow strain rate testing  
R. K. Singh Raman and B. C. Muddle
- 645 Transformation kinetics of unalloyed and high Mn austempered ductile iron  
M. Nili Ahmadabadi and S. Farjami
- 650 Dry sliding wear of low alloyed austempered ductile iron  
B. Bosnjak, B. Verlinden and B. Radulovic
- 657 X-ray diffraction and TEM analysis of Fe-Al alloy layer in the coating of new hot dip aluminised steel  
Y.-J. Li, J. Wang and X. Holly
- 661 Wear behaviour of Fe/M<sub>2</sub>C<sub>3</sub> metal matrix composites with different microstructures during dry sliding  
O. Yilmaz, M. Askoy and S. Yildirim
- 669 Influence of the microstructure of pyrocarbon coating on mechanical properties of SiC/Ti6242 composite  
N. Carrere, F. Lardillier, M.-H. Vidal-Sétil and R. Valle
- 679 Induction time in nucleation kinetics  
M. J. Stowell
- 683 Accumulation of coincidence site lattice boundaries during grain growth  
G. N. Hassold, E. A. Holm and M. A. Miodek
- 688 Electrocatalytic behaviour of titanium implanted with nickel and molybdenum ions  
W. J. Lin and J. M. Sang
- 691 Effect of annealing and thermal cycling on phase transformation behaviour of Ni-Mn-Ga alloy  
Z. Y. Gao, X. K. Zhao, F. Chen, W. Cai, L. C. Zhao, G. H. Wu, J. L. Chen and W. S. Zhan
- 695 High temperature oxidation behaviour of directionally solidified nickel base superalloy CM-247LC  
D. K. Das, Vakil Singh and S. V. Joshi
- 709 Warm rolling behaviour of low carbon steels  
A. O. Humphreys, D. Liu, M. R. Toroghinejad, E. Essadiqi and J. J. Jonas
- 715 Simple constitutive relationship for C-Mn steels deformed at elevated temperatures  
E. S. Puchi-Cabrera
- 723 Modelling and characterisation of Mo<sub>2</sub>C precipitation and cementite dissolution during tempering of Fe-C-Mo martensitic steel  
S. Yamasaki and H. K. D. H. Bhadeshia
- 732 Contribution of coarsening of MX carbonitrides to creep strength degradation in high chromium ferritic steel  
K. Sawada, K. Kubo and F. Abe
- 739 *In situ* observation of recovery of lath structure in 9% chromium creep resistant steel  
K. Sawada, M. Taneike, K. Kimura and F. Abe
- 743 Effect of consolidating temperature on strengthening mechanism in Fe-Cu alloy from rapidly solidified powder  
K. Kakisawa, K. Minagawa, T. Kimura and K. Halada
- 749 High temperature tension tests and oxide scale failure  
M. Trull and J. H. Beynon
- 757 High-strength Al-Zn-Mg-Cu-Ni-Si alloy with improved casting properties  
D. Vojtěch, J. Šerák, O. Eckert, T. Kubatík, Č. Barta, Č. Barta, Jr and E. Tagiev
- 762 Intermetallic compounds in thixoformed alloy A356  
K. Y. Wen, W. Hu and G. Gottstein
- 769 Production of Al-Ti-B grain refining master alloys  
M. S. Lee and P. Grieveson
- 773 Effect of friction welding parameters on mechanical and metallurgical properties of aluminium alloy 5052-A36 steel joint  
W. B. Lee, Y. M. Yeon, D. U. Kim and S. B. Jung
- 779 Effects of rolling and sintering temperature on peel strength of bonding interfaces for Ag/Cu bimetallic strips  
L. Meng, L. Zhang, S. P. Zhou and F. T. Yang
- 785 Joint properties of friction stir welded AZ31B-H24 magnesium alloy  
W. B. Lee, Y. M. Yeon and S. B. Jung
- 791 Formation of hypoeutectic microstructure in a rapidly solidified Al-5 wt-%Sr alloy  
Z.-H. Zhang, X.-F. Bian and Y. Wang
- 796 Microstructural and mechanical characterisation of premixed spray formed A357-SiC<sub>p</sub> composite  
A. Zambon, B. Badan and A. Maddalena
- 803 Enhancing modulus and ductility of a Mg/SiC composite through judicious selection of extrusion temperature and heat treatment  
S. C. V. Lim and M. Gupta
- 809 Fatigue damage of carbon-epoxy laminates with embedded optical fibres  
J. M. A. Silva, J. A. M. Ferreira and T. C. Devezas
- 815 Beta ray monitoring technique for control of resin content in continuous fibre prepreg materials  
Y. D. Huang, Y. F. Sun and L. Liu
- 819 Effects of aluminium powder content and cold rolling on foaming behaviour of xAl<sub>p</sub>/Al5Si4Cu4Mg/0.8TiH<sub>2</sub> composites  
H. J. Lee, S. H. Eom, Y. K. Song and S. S. Cho
- 826 Synthesis of nanocrystalline nickel and zinc ferrites by microemulsion technique  
R. D. K. Misra, A. Kale, R. S. Srivastava and O. N. Senkov
- 831 Short communication Microstructural stability of austempered ductile iron after subzero cooling  
R. W. Gregorutti, J. L. Sarutti and J. Sikora
- 837 Nature of friction in extrusion process and its effect on material flow  
I. Flitta and T. Sheppard
- 847 Aspects of thermomechanical fatigue of two single crystal nickel based superalloys  
H. Zhou, H. Harada, Y. Ro, T. Kobayashi and Y. Koizumi

- 853 **Evolutionary stress cycle behavior and damage mechanisms in nickel based superalloy under thermomechanical fatigue**  
F. Liu, Y. C. Wang, H. Zhang, S. H. Ai and Z. G. Wang
- 859 **Scalable, continuous variable, cellular automaton model for grain growth during homogenisation of vacuum arc remelted Inconel 718**  
A. Kermanpur, W. Wang, P. D. Lee and M. McLean
- 866 **Experiments on interaction of liquid tin with solid copper**  
L. Snugovsky, M. A. Ruggiero, D. D. Perovic and J. W. Rutter
- 875 **Effect of austenite deformation on the crystallographic texture during transformations in microalloyed bainitic steel**  
C. Mesplont and B. C. De Cooman
- 887 **Dependence of fracture toughness on multiscale second phase particles in high strength Al alloys**  
G. Liu, G.-J. Zhang, X.-D. Ding, J. Sun and K.-H. Chen
- 897 **Fracture behaviour of selective laser sintered Rapidsteel 2.0 under static and dynamic loading**  
D. Uzonsoy, I. T. H. Chang and P. Bowen
- 902 **In situ TEM studies of the mechanisms of crack nucleation and propagation in fully lamellar microstructures**  
S. Li, T. H. Yip, R. V. Ramanujan and M. H. Liang
- 907 **Effect of moisture upon mechanical properties of ceramic moulds during high pressure steam dewaxing**  
S. Jones, M. R. Jolly, S. Blackburn, J.-C. Gebelin, A. Cendrowicz and K. Lewis
- 915 **Effect of calcium on primary silicon particle size in hypereutectic Al–Si alloys**  
H.-J. Kim
- 919 **Simple model for the consolidation of metal matrix coated SiC fibre composites**  
J. Carmai and F. P. E. Dunne
- 925 **Fabrication of Al–TiC master composites and their dispersion in Al, Cu and Mg melts**  
V. H. Lopez, S. Truelove and A. R. Kennedy
- 931 **High performance automotive and railway components made from novel competitive aluminium composites**  
J. Goñi, P. Egizabal, J. Coleto, I. Mitxelena, I. Leunda and J. R. Guridi
- 935 **Deposition of silicon modified aluminide coatings on nickel based superalloys by pack cementation process**  
Z. D. Xiang and P. K. Datta
- 943 **High strain rate superplasticity of hot extruded and hot rolled AA 6013/20 vol.-%SiC<sub>p</sub> composite**  
L. Ceschin and A. Morri
- 949 **Effect of magnesium addition on wear behaviour of Al-70 vol.-%Al<sub>2</sub>O<sub>3</sub><sub>p</sub> composites**  
A. Ahlatci, K. Karakaş, E. Candan and H. Cimenoğlu
- 955 **Interface stress relaxation in magnesium matrix composites studied by mechanical spectroscopy**  
O. Couteau and R. Schaller
- 959 **Effect of magnesium on sliding wear performance of cast Al-8·3Fe-0·8V-0·9Si alloys**  
K. L. Sahoo and S. K. Das
- 966 **Isothermal nanocrystallisation behaviour of melt spun Al<sub>90</sub>Ni<sub>10</sub>Mm<sub>5</sub> (Mm misch metal) amorphous alloy**  
S. J. Hong, H. S. Kim, C. Suryanarayana and B. S. Chun
- 973 **Relationship between glass forming ability and thermal parameters of Zr based bulk metallic glasses**  
Y. Zhang, D. Q. Zhao, M. X. Pan and W. H. Wang
- 977 **Electron beam induced current studies of strain balanced InGaAs/InGaAs multiquantum wells**  
S. Tundo, M. Mazzer, L. Lazzarini, L. Nasi, G. Torsello, D. Diso, G. Clarke, C. Rohr, P. Abbott, K. Barnham and R. Ginige
- 981 **Conductance and phase transition of freestanding ZnO nanocrystals under high pressure**  
Z. Y. Wu, Z. X. Bao, X. P. Zou, D. S. Tang, C. X. Liu, J. H. Dai, S. S. Xie, Q. S. Li, Z. X. Shen and B. X. Zou
- 985 **Short communication Relationship between tensile strength and porosity for foamed metals under equal speed biaxial tension**  
P. S. Liu, X. S. Wang and H. Y. Luo
- 987 **Short communication Nanocrystalline diamond films deposited using a new growth regime**  
N. Ali, V. F. Neto, Y. Kousar, G. Cabral and J. Gracio
- 991 **Technical note Production of MgAl<sub>2</sub>O<sub>4</sub>/TiN composite by aluminothermic reduction and nitridation**  
Y.-B. Li, N. Li and G.-Z. Ruan
- 995 **Overview Disordered carbon – its preparation, structure, and characterisation**  
K. Dasgupta and D. Sathiyamoorthy
- 1003 **Microstructural characterisation of high velocity oxyfuel thermally sprayed Stellite 6**  
G. Kong, D. Zhang, P. D. Brown, D. G. McCartney and S. J. Harris
- 1012 **Finite element creep damage study of nickel base single crystal structures under multiaxial stress states**  
Z.-F. Yue and Z.-Z. Lu
- 1017 **Evaluating fatigue performance of down gauged high strength steel suspension arm**  
R. Ellwood, T. B. Jones and G. Fourlaris
- 1025 **Coating structure and properties of continuously hot dipped aluminised steel wire**  
W. Li, S. Liu, Q. Huang and M. Gu
- 1029 **Distribution of strong carbide forming elements in hard facing weld metal**  
Y.-B. Zhang and D.-Y. Ren
- 1033 **Evaluation of fracture toughness of interface between weld overlay and base metal in a hydrocracker reactor**  
A. R. Abdolmaleki, S. H. Mirdamadi, H. Arabi and M. Rahamanian
- 1037 **Texture evolution in hot band and annealed hot bands of low alloyed ferritic stainless steel**  
C. D. Singh and S. Kumar
- 1045 **Effect of welding thermal cycles and cold working on fracture toughness of SN490 steel under static and dynamic loading**  
H. Qiu, Y. Kawaguchi, M. Enoki and T. Kishi
- 1050 **Effect of surface properties on high cycle fatigue behaviour of shot peened ductile steel**  
R. Fathallah, H. Sidhom, C. Braham and L. Castex

- 1057 Pressure infiltration casting process and thermophysical properties of high volume fraction SiC<sub>p</sub>/Al metal matrix composites**  
H. S. Lee and S. H. Hong
- 1065 Modelling the flow behaviour of steel at non-isothermal conditions**  
S. Serajzadeh and S. M. Zebarjad
- 1070 Segregation and eutectic formation in solidification of Fe-1C-1.5Cr steel**  
T. Kato, H. Jones and D. H. Kirkwood
- 1077 Rigid-plastic constitutive theory for normal anisotropic and planar isotropic sheet metals with voids**  
Y. Yin, L. Zhang, Y. Chen and Q. Fan
- 1084 Modelling wide gap TLP bonding of Ti-48 at.-%Al-2 at.-%Cr-2 at.-%Nb alloys**  
T. Zhou and W. F. Gale
- 1091 Sliding temperature and wear behaviour of cast Al-Si base alloy**  
D. K. Dwivedi
- 1097 Thermal properties of Mg-Li and Mg-Li-Al alloys**  
A. Rudajevová, S. Kudela, M. Staněk and P. Lukáč
- 1101 Activation energies of intermetallic compound growth at interface between Sn-5Bi-3.5Ag solder and Cu substrate**  
J.-W. Yoon, C.-B. Lee and S.-B. Jung
- 1107 Numerical simulation of thermal conductivity of MMCs: effect of thermal interface resistance**  
D. Duschlauer, H. J. Böhm and H. E. Pettermann
- 1115 Thermomechanical fatigue of short fibre reinforced aluminium matrix piston alloy**  
A. Schnabl and H. P. Degischer
- 1119 Mechanical behaviour of Al<sub>2</sub>O<sub>3</sub>-ZrO<sub>2</sub> minicomposite reinforced glass matrix optomechanical composite**  
A. F. Dericioglu and Y. Kagawa
- 1125 Effects of short mullite fibres on aging response of Al-4.5Cu based metal matrix composite**  
W. Li, S. Jing, B. L. Shen, S. J. Gao and M. J. Tu
- 1130 Microstructure and mechanical properties of spray deposited and extruded 7000 series aluminium alloys**  
E. Salamci and R. F. Cochrane
- 1137 Effect of carbon content on plastic flow behaviour of plain carbon steels at elevated temperature**  
F. Escobar, J. M. Cabrera and J. M. Prado
- 1148 In situ fabrication of titanium carbide reinforced copper MMC**  
J. Bannan, R. I. Temple and R. Jones
- 1153 Overview Polymer morphology and crystallisation**  
P. J. Phillips
- 1161 Overview Polymer processing**  
J. Vlachopoulos and D. Strutt
- 1170 Overview Nanorheology of confined fluids**  
A. Dhinojwala
- 1175 Overview Diffusion through polymeric solids undergoing large deformations**  
K. R. Rajagopal
- 1181 Overview Influence of nanoscale fibres and discs on intrinsic modulus and packing fraction of polymeric particulate composites and suspensions**  
R. D. Sudduth
- 1191 Overview Nuclear magnetic resonance studies of metals in solid state non-metallic materials**  
K. Srikanth, R. W. Schurko, I. Hung and A. Ramamoorthy
- 1197 Thermomechanical processing route to induce ultrafine grain structure by continuous recrystallisation in aluminum and its alloys**  
H. Jin and S. Saito
- 1207 High strength weldable Al-Zn-Mg base alloys produced by water atomisation**  
A. V. Krajnikov, Yu. V. Shamov and G. E. Thompson
- 1215 Centrifugal casting of aluminium containing *in situ* formed TiB<sub>2</sub>**  
M. F. Forster, R. W. Hamilton, R. J. Dashwood and P. D. Lee
- 1220 Effect of oxidation exposure on flexural strength of liquid phase sintered SiC with AlN and Er<sub>2</sub>O<sub>3</sub> additives between 1200 °C and 1400 °C**  
S. Guo, N. Hirosaki, H. Tanaka, Y. Yamamoto and T. Nishimura
- 1225 Interfacial reactions in Al/TiC particulate composites produced by pressure infiltration**  
R. Arpon, J. Narciso, E. Louis and C. Garcia-Cordovilla
- 1231 Processing and properties of high volume fraction reinforced aluminium/silicon composites**  
C. W. Chien, S. L. Lee and J. C. Lin
- 1235 Temperature measurements during induction skull melting of titanium aluminide**  
R. A. Harding and M. Wickins
- 1247 Diffusion coatings resistant to oxidation for γ-TiAl by pack codeposition of Al and Si**  
Z. D. Xiang, S. R. Rose and P. K. Datta
- 1253 Stress-strain analysis of creep deterioration in heat affected weld zone in high Cr ferritic heat resistant steel**  
D. Li, K. Shinozaki and H. Kuroki
- 1261 Feasibility evaluation of EDM hole drilling method for residual stress measurement**  
H. T. Lee and F. C. Hsu
- 1266 Plastic deformation and fracture response of 304 stainless steel subjected to dynamic shear loading**  
S.-T. Chiou and W.-S. Lee
- 1273 Surface engineering of WC-Co used in dental tools technology**  
N. Ali, G. Cabral, V. F. Neto, H. Sein, W. Ahmed and J. Gracio
- 1279 Molecular and microdeformation characteristics of ethylene-propylene copolymers during tensile loading**  
A. Dasari, R. S. Perkins, J. Rohrmann and R. D. K. Misra

- 1289 Ductile behaviour of ethylene-propylene block copolymers**  
A. Dasari, S. Kolluru, J. Rohrmann and R. D. K. Misra
- 1298 Atomic force microscopy characterisation of scratch deformation in long and short chain isotactic polypropylenes and ethylene-propylene block copolymers**  
A. Dasari, J. Rohrmann and R. D. K. Misra
- 1311 Recrystallisation after hot deformation of two phase stainless steels**  
F. E. Al Joufi and C. M. Sellars
- 1321 Heterogeneous deformation of a two-phase nickel-tungsten alloy**  
C. W. Sinclair, J. D. Embury, G. C. Weatherly, K. T. Conlon and O. Engler
- 1330 Avrami theory for transformation from non-uniform austenite grain structure**  
H. Matsuda and H. K. D. H. Bhadeshia
- 1335 Modelling and characterisation of V<sub>4</sub>C<sub>3</sub> precipitation and cementite dissolution during tempering of Fe-C-V martensitic steel**  
S. Yamasaki and H. K. D. H. Bhadeshia
- 1344 Influence of precipitation on serrated flow in Al-5Zn-1Mg alloy**  
S. Kumar, R. Shabadi and M. M. Patel
- 1349 Influence of grain size on tensile properties of Al-Mg alloys**  
D. J. Lloyd and S. A. Court
- 1355 Damage and forming limit analysis in porous ductile sheet metals at room or elevated temperatures**  
L. Zhang, Y.-J. Yin, Y.-Q. Chen and M.-D. Xue
- 1361 Modelling recovery and recrystallisation during annealing of AA 5754 aluminium alloy**  
J. Go, W. J. Poole, M. Miltzer and M. A. Wells
- 1369 Superplastic behaviour of annealed AA 8090 Al-Li alloy**  
B. P. Kashyap and M. C. Chaturvedi
- 1379 Comparison of texture evolution during cold rolling between direct chill and continuous cast aluminum alloy 5052**  
Y. M. Zhao, W. C. Liu and J. G. Morris
- 1386 AZ80 and ZC71/SiC/12p closed die forgings for automotive applications: technical and economic assessment of possible mass production**  
V. Kevorkijan
- 1391 Roles of alloying elements in microstructures of beta titanium alloys with carbon additions**  
Z. Q. Chen, Y. G. Li, D. Hu, M. H. Loretto and X. Wu
- 1399 Surface wetting and interfacial behaviour in arc brazing of titanium alloy**  
Z.-S. Yu, Y.-Y. Qian, R.-F. Li, K. Qi and F.-M. Zhou
- 1403 Decrease in fatigue life of Sn-3.8 wt-%Ag-2 wt-%Cu alloy solder joints due to thermal cycling**  
H. Kato, K. Matsubara and K. Kageyama
- 1411 Metallurgical changes and mechanical behaviour during high temperature aging of welds between Alloy 800 and 316LN austenitic stainless steel**  
M. Sireesha, S. K. Albert and S. Sundaresan
- 1418 Impact performance of friction welded butt joints between 6061-T6 aluminium alloy and type 304 stainless steel**  
T. Yokoyama
- 1427 Effect of annealing on corrosion behaviour of nitrogen S phase in austenitic stainless steel**  
X. Y. Li and H. Dong
- 1435 Correlation between Charpy impact energy and J fracture toughness for thermally embrittled reactor pressure vessel steel**  
J. R. Tarpani and D. Spinelli
- 1442 Synthesis and some properties of Ti<sub>3</sub>SiC<sub>2</sub> by hot pressing of titanium, silicon and carbon powders**  
Part 1 - Effect of starting composition on formation of Ti<sub>3</sub>SiC<sub>2</sub> and observations of Ti<sub>3</sub>SiC<sub>2</sub> crystal morphology  
S. B. Li, J. X. Xie, L. T. Zhang and L. F. Cheng
- 1447 Tensile deformation behaviour of high isotactic polypropylenes**  
A. Dasari, K. K. Tenneti, J. Rohrmann and R. D. K. Misra
- 1458 Atomic force microscopy characterisation of mechanically induced surface damage in ethylene-propylene diblock copolymeric materials**  
A. Dasari, J. Rohrmann and R. D. K. Misra
- 1469 Interaction energy parameters in hypo-stoichiometric mono-carbides, TiC<sub>x</sub> and NbC<sub>x</sub>, evaluated by statistical thermodynamics**  
N. Shohoji
- 1473 Microstructural, physical and mechanical characteristics of bulk nanocrystalline copper synthesised using powder metallurgy**  
M. A. Thein and M. Gupta
- 1478 Potentiometric SO<sub>2</sub> gas sensor based on Ca<sup>2+</sup> conducting solid electrolyte**  
L. Wang and R. V. Kumar
- 1483 Interrupted aging and secondary precipitation in aluminium alloys**  
R. N. Lumley, I. J. Polmear and A. J. Morton
- 1491 Superplasticity in a 7055 aluminum alloy subjected to intense plastic deformation**  
R. Kaibyshev, T. Sakai, I. Nikulin, F. Musin and A. Goloborodko
- 1498 Microstructure and texture of aluminium alloys 3105 and 3015 during cold rolling and annealing**  
J.-T. Liu, Y.-S. Liu and J. G. Morris
- 1507 Some aspects of cold upset forming of sintered aluminium preforms using graphite lubricant**  
R. Narayanasamy and N. Selva Kumar
- 1513 Evaluation of the microstructure and mechanical properties of friction stir welded 6005 aluminium alloy**  
W. B. Lee, Y. M. Yeon and S. B. Jung
- 1519 Sliding wear behaviour of Al-Si-Cu composites reinforced with SiC particles**  
X.-G. Zou, H. Miyahara, K. Yamamoto and K. Ogi
- 1527 Quantitative evaluation on wear resistance of aluminium alloy composites densely packed with SiC particles**  
X.-G. Zou, H. Miyahara, K. Yamamoto and K. Ogi

- 1531 Wear behaviour of aluminium matrix TiB<sub>2</sub> composite prepared by *in situ* processing**  
M. Fazel Najafabadi, M. A. Golozar, A. Saidi and H. Edris
- 1533 Use of high temperature X-ray diffractometry to study phase transitions and thermal expansion properties in Ti-6Al-4V**  
R. Pederson, O. Babushkin, F. Skystedt and R. Warren
- 1539 Discontinuous precipitation in a Cu-4.5 at.-% in alloy**  
G. A. López, P. Zieba, W. Gust and E. J. Mittemeijer
- 1546 X-ray investigation of solid solution partitioning in 2.25Cr-1Mo steel after extended elevated temperature service in a power station**  
V. Jayan, M. Y. Khan and M. Hussain
- 1553 Influence of phosphorus on the hot ductility of 2.25Cr-1Mo steel**  
A.-M. Guo, Y.-H. Wang, D.-D. Shen, Z.-X. Yuan and S.-H. Song
- 1557 Microstructural evolution during thermomechanical processing of microalloyed medium carbon steels**  
P. Zhao and J. D. Boyd
- 1564 Correction of plane strain compression data for the effects of inhomogeneous deformation**  
B. Kowalski, A. J. Lacey and C. M. Sellars
- 1571 Creep rupture ductility related to creep fracture mechanisms in 2.25Cr-1Mo steel**  
N. Shinya, J. Kyono and M. D. Mathew
- 1575 Low cycle fatigue resistance of SA533 pressure vessel steels**  
J. Y. Huang, J. R. Hwang, R. C. Kuo and C. Y. Chen
- 1585 Pressureless moulding of 316L and D2 steel powders using a hybrid binder**  
R. Di Maggio, S. Gianella, M. Cesconi and A. Molinari
- 1590 Effect of tube spinning and subsequent heat treatments on strength, microstructure and residual stress state of AISI/SAE type 4140 steel**  
C. H. Gür and E. B. Arda
- 1595 Effect of heat treatment on microstructures of flow formed C-250 maraging steel**  
I. K. Lee, C. P. Chou, C. M. Cheng and I. C. Kuo
- 1603 Poly(*o*-toluidine) coatings on low carbon steel: synthesis and characterisation**  
V. Shinde and P. P. Patil
- 1611 Mechanical properties of laser cladded steel**  
S. Niederhauser and B. Karlsson
- 1617 Some aspects of nanocrystalline nickel and zinc ferrites processed using microemulsion technique**  
R. D. K. Misra, A. Kale, B. J. Kooi and J. Th. M. De Hosson
- 1622 Short communication Microstructural evolution in an Ni-Mn-Ga alloy during compression**  
Z. Y. Gao, W. Cai, L. C. Zhao, W. H. Wang, G. H. Wu, B. G. Shen and W. S. Zhan
- 1627 Overview Enhancement of high temperature strength and room temperature ductility of iron aluminides by alloying**  
Aruna Bahadur
- 1635 Influence of flow stress and specimen geometry on the fracture morphology of Nickel 270**  
D. P. Harvey II
- 1642 Movement of alloying elements in Mg-8.5 wt-%Li and AZ91 alloys during tensile tests for superplasticity**  
A.-B. Ma, Y. Nishida, N. Saito, I. Shigematsu and S.-W. Lim
- 1648 Evolution of dynamic recrystallisation in AISI 304 stainless steel**  
S.-I. Kim, B.-C. Ko, C.-M. Lee, S.-K. Hwang and Y.-C. Yoo
- 1653 Theoretical model for heterogeneous nucleation of grains during solidification**  
E. Fraš, K. Wiencek, M. Górný and H. López
- 1661 Serrated yielding in Cu-1 wt-%Cd alloy**  
S. Nagarjuna, F. N. Anozie and J. T. Evans
- 1665 Effect of recrystallisation on microstructural evolution and mechanical properties of single crystal superalloy CMSX-2 Part 1 – Microstructural evolution during recrystallisation of single crystal**  
C.-Y. Jo, H.-Y. Cho and H.-M. Kim
- 1671 Effect of recrystallisation on microstructural evolution and mechanical properties of single crystal superalloy CMSX-2 Part 2 – creep behaviour of the surface recrystallised single crystal**  
C.-Y. Jo and H.-M. Kim
- 1677 Development of directionally solidified Ni-Al-Mo-B-Y alloy IC6A**  
C. B. Xiao, Y. F. Han, S. S. Li and J. X. Song
- 1681 Fabrication and mechanical properties of woven Al<sub>2</sub>O<sub>3</sub> fibre-ZrO<sub>2</sub> matrix minicomposite reinforced Al<sub>2</sub>O<sub>3</sub> matrix composites by slurry infiltration-sintering process**  
H. Kakisawa, T. Mamiya, S. Q. Guo, W. H. Liu, S. J. Zhu and Y. Kagawa
- 1688 Effect of prior  $\beta$  processing steps on microstructural refinement during thermomechanical processing of a two phase ( $\alpha+\beta$ ) titanium alloy**  
K. Mallikarjun, S. Suwas, S. G. Chowdhury and S. Bhargava
- 1697 Influence of retrogression and reaging on fracture toughness of 7010 aluminium alloy**  
J. S. Robinson
- 1705 Observations of brelling in aluminium solid cylinders during cold upsetting using different lubricants**  
S. Malayappan and R. Narayanasamy
- 1709 Microstructure and its influence on refining performance of AITIC master alloys**  
Z. Q. Wang, X. F. Liu, S. T. Li, X. F. Bian and J. Y. Zhang
- 1715 Effect of carbon concentration on tensile behaviour of pearlite steels**  
Y. Tomota, O. Watanabe, A. Kanie, A. Moriai, N. Minakawa and Y. Moriai
- 1721 Influence of silicon, aluminium, phosphorus and boron on the hot ductility of Transformation Induced Plasticity assisted steels**  
B. Mintz, A. Tuling and A. Delgado
- 1727 Solidification microstructures and mechanical properties of vertical centrifugal cast high speed steel**  
S. W. Kim, U. J. Lee, K. D. Woo and D. K. Kim

- 1733 Cavitation erosion resistance of Fe–26Mn–6Si–7Cr–1Cu shape memory alloy**  
N. D. Long and J. H. Zhu
- 1737 Stress corrosion cracking and hydrogen embrittlement cracking of welded weathering steel and carbon steel in a simulated acid rain environment**  
Y.-S. Choi and J.-G. Kim
- 1746 Caustic stress corrosion cracking of a spheroidal graphite cast iron: characterisation of ex-service component**  
R. K. Singh Raman and B. C. Muddle
- 1751 Caustic stress corrosion cracking of a spheroidal graphite cast iron: laboratory investigation**  
R. K. Singh Raman and B. C. Muddle
- 1755 Carbide dissolution in thin wall ductile iron**  
A. Giacopini, R. E. Boeri and J. A. Sikora
- 1761 Simultaneous prediction of austemperability and processing window for austempered ductile iron**  
S. H. Zahiri, C. H. J. Davies and E. V. Pereloma
- 1771 Effects of test specimen geometry on creep behaviour of 12Cr steel in miniaturised disk bend tests**  
B. Ule, R. Šturn and V. Leskovček
- 1777 Die wall friction and influence of some process parameters on friction in iron powder compaction**  
N. Solimanjad and R. Larsson

---

**Book reviews**

pages 266, 676

**Obituaries**

pages 409, 1309

**Conference diary**

pages 141, 267, 410, 551, 677, 836, 994, 1151, 1310, 1467, 1626, 1783